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ABSTRACT

A federation of alternative schools called New Collaborative Schools (NCS) has been proposed to improve educational outcomes of academically able but low-performing high school students. The NCS model would combine the advantages of high school-college collaborations with the most effective practices for improving the educational experiences of "at-risk" high school students. This report provides background for the NCS model. After discussing what constitutes an at-risk student, the report reviews various types of alternative schools, including alternative classrooms, schools-within-schools, continuation schools, career academies, tech-prep schools, magnet schools, and separate alternative schools. Key elements of successful alternative schools are autonomous small learning environments; increased educational engagement, possibly using a new curriculum and instructional techniques; and strong teacher input into school governance and curriculum. An examination of college-high school collaborations reveals their key attributes to be flexible educational pacing, broader curriculum options, and internships. A review of effective schools finds that common characteristics include a sense of community among students and teachers, a significant change in school curricula, and increased teacher involvement in the setting of curricula as well as other school reforms. Recommendations for the establishment of the NCS include small learning environments, curriculum and instructional reforms appropriate to the target students, ongoing professional development, consistent and constant counseling and monitoring, and frequent evaluation and assessment. An appendix presents features of selected alternative schools. (Contains 70 references.) (TD)

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Background Paper for New Collaborative Schools (NCS): An Overview of At-Risk High School Students and Education Programs Designed To Meet Their Needs

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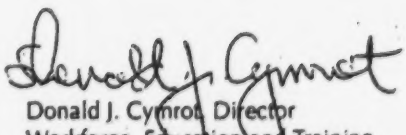

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Introduction

In the fall of 1999, The Appalachian Education Lab (AEL) submitted a proposal to the Department of Education to design and evaluate a federation of alternative schools that would be called New Collaborative Schools (NCS). The purpose of the NCS model would be to improve education outcomes of students who are academically able, but are under-performing in traditional high school settings. Developers intend to build an NCS model that is grounded in effective practices for improving the educational experiences of "at-risk" high school students. One school design that has been identified as effective is an educational collaboration between high schools and institutions of higher education. The NCS model proposes to combine the advantages of high school-college collaborations with the most promising elements of education reform models to create a highly effective, research-based intervention. In doing so, it will use state-of-the-art technology to build sustainable learning communities for teachers, students, and staff across the coalition of NCS sites.

This paper lays the groundwork for the development of the NCS model, including

- Identification of the "at-risk" student population to be served
- Review and assessment of the success of alternative education practices that serve at-risk students
- Determination of key organizational elements and educational practices that ought to help shape the New Collaborative Schools model.

The existing research literature identifies a variety of characteristics that are associated with students who are at-risk of failure or dropping out of school. High school-college collaborations tend to serve students who are capable, but under-performing in a traditional high-school setting. These students are typically disengaged from their peers, school faculty, school culture, and learning in their traditional high schools. Although many of these students have the intellectual capacity to do well in high school, their disengagement from school restricts their success. Further, anecdotal evidence suggests that moving disengaged high school students to a college setting can improve student outcomes. However, rigorous research on these high school-college collaborations is lacking. High school-college collaborations are likely to benefit from the rigorous research design that is planned as part of the NCS effort.

A broader review of the literature on alternative and effective schools argues for New Collaborative Schools to contain the following key elements:

- Small learning environment
- Curriculum and instruction reform
- Significant teacher/staff development

- Strong counseling and guidance services
- Evaluation, assessment, and feedback.

This paper is organized in the following manner. Section II explores the different conceptions of "at-risk" students. In Section III, we cover the literature on education reform models. First, we identify the common attributes of a variety of "alternative schools" that have been designed to serve at-risk students. We then evaluate the evidence of success of these programs and consider the common characteristics of the most successful alternative programs. We pay particular attention to the one form of alternative school that represents the basic form of the NCS: high school-college collaborations.

Next we review the "effective schools" literature. Much of the evidence on effective schools literature comes from large urban school districts that serve large subpopulations of students who are vulnerable to early attrition from K-12 education. This review uncovers a set of attributes and practices that are common among schools that seem to outperform others that serve similar populations. In the final section, we use the review of this literature to provide design recommendations for the establishment of the NCS.

Who is at-risk?

The first stage in the design of a successful education reform model is to identify the at-risk student population that the intervention is intended to serve. Identification is complicated by the presence of more than one type of at-risk student.[1] The traditional at-risk student is not successful in school and is a potential dropout. In their review of the literature, Frymier and Gansneder (1989) identify 45 factors associated with being this type of at-risk student. Rumberger (1987) groups many of these dropout factors into six categories: (1) demographic (e.g., race), (2) family-related (e.g., parents' education and occupation levels, family income, single-parenthood, limited English proficiency, and the absence of books or other learning materials in the home), (3) peer (e.g., having delinquent friends or friends who drop out), (4) economic (e.g., the student's decision to work in order to increase family income), (5) individual (e.g., low self-esteem, the lack of high educational/occupational aspirations, and the desire to get married and/or pregnant), and (6) school-related (e.g., low achievement, being held back a grade, working while enrolled, misbehavior, and having a sibling that dropped out).[2] Vartanian and Gleason (1999) add neighborhood conditions to this list of factors. They find that the conditions of the neighborhood affect African American pupils' decisions (but, interestingly, not those of white pupils) to drop out of high school. Rumberger notes that, while individual research in this literature has focused on a few of these factors, there has been no comprehensive study of the dropout decision. This is important because no single dropout risk factor may be the most important. Clearly, many students have several of these characteristics and it would be difficult to isolate the impact of any individual factor.

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[1] Many states have gone so far as to adopt a formal definition of "at-risk." See Mirga (1988).
[2] Goldschmidt and Wang (1999) also review this literature.

In addition to these traditional at-risk students, there is also a large population of students who have a high potential to learn (e.g., gifted, talented, creative, artistic), but have not succeeded (or have not reached expectations) in the traditional school setting. These students might be nontraditional learners, disengaged from their high school, underachievers, unmotivated, and/or socially isolated. They differ from the traditional at-risk students because their educational problems are often not linked directly to socioeconomic factors or other obvious characteristics. Instead, these students are considered at-risk of failure to meet expectations as a result of their disengagement with the traditional high school. While these at-risk students may exhibit some of the same characteristics as the traditional at-risk student (e.g., high rates of absenteeism, grade retention, low grades, and truancy), there is not a "typical" student with a standard set of risk factors. For a variety of reasons, these students are often disengaged, unmotivated, or otherwise unhappy in the traditional high school environment. Since many of these students do not have the standard risk factors, the identification and recruitment of nontraditional at-risk students for any intervention is more difficult. Moreover, since the nature of these students' problems is largely different from the traditional at-risk student, this broadened definition clearly affects the appropriate intervention.

Education reform models

The last few years have seen a heightened interest in research and development on "alternative schools." The underlying assumption of the alternative school movement has been that, although all children can learn, some may require nontraditional settings in order to reach their potential. Alternative schools are typically secondary schools designed for "students who have not done well in, or adjusted well to, the 'main' school" [Tice (1994)]. Raywid (1988) defines alternative schools as a real alternative to regular school—both students and staff are there voluntarily; the school has its own mission and/or special identity; and the school's administrative unit is separate from the regular school. Various student types are served by these alternative schools, including students with special needs (e.g., gifted and talented), or students who have left school or are at risk of dropping out.

Examples of alternative school models that focus on at-risk students include:[3]

- **Alternative classroom** – a self-contained classroom within a traditional school.
- **School-within-a-school** – an autonomous (or semi-autonomous) curriculum-based program located within a traditional school; it reports to a separate school district administrator and not the school principal.
- **Continuation school** – designed for students no longer enrolled in traditional schools.
- **Career academies** – combine academic and vocational curricula, usually with paid employment in the student's field of study, and employer mentors.

[3] Some of these models are reviewed at www.dropoutprevention.org

- **Tech-prep schools** – offer coursework to train students for a technical career, with two years of post-secondary schooling leading to an associate's degree.

- **Magnet school** – usually housed in a traditional school offering an intensified curriculum in subjects such as math, science, and the arts.

- **Separate alternative schools** – program housed in a separate location from the traditional high school (e.g., middle college high school).

Although listed separately, these models are not mutually exclusive. For example, many career academies and magnet schools operate as schools-within-schools.

Key elements of alternative schools

In her review, Raywid (1995) suggests that successful alternative schools may have some combination of the following characteristics:

- Small school size

- Designed and primarily controlled by the schools' teachers and administrators

- Guided by the strengths and interests of the teachers

- Selected by the students and their families

- Administered by a teacher-director

- Placed as mini-schools within a larger school environment

- Controlled by a protective superintendent

- Enjoyed considerable autonomy from the larger public school district

- Sustained at academic communities where students are engaged educationally.

These features can be grouped into three general categories: (1) autonomous small learning environments, (2) increased educational engagement possibly using a new curriculum and instructional techniques with a ready and willing student body, and (3) strong teacher input into school governance and curriculum. Because the educational environment and curriculum in alternative schools are significantly different than in regular schools, many of these reforms require a considerable amount of professional staff development.

Small schools

Smaller school size is a key design element of many educational reform programs. Because constructing new schools is often cost prohibitive, smaller size is typically achieved by creating individual "schools-within-schools" or by separating corridors and classrooms within traditional high school buildings. Alternatively, new smaller schools can be created outside the traditional high school building. Whatever form the small school takes, Raywid (1996) observes that its success or failure depends on its ability to maintain a large degree of autonomy from the parent school, to establish a collective identity, and to be distinct from the parent school. Autonomy can be achieved through a physical separation (separate corridors and/or doors separating the alternative program from the traditional school), a separation of values, and/or a separation of authority over the determination of staff, resources, and education goals. A distinctive collective identity is achieved through a unique school style that could involve a distinguishing instructional program or it could be as simple as customs and celebrations that are unique to the individual small school.

The empirical evidence on the impact of school size on student outcomes is substantial.[4] Several researchers have identified school size as an important factor for improving student achievement, participation, and behavior. Evidence of small school effectiveness has primarily focused on the positive relationships between school size and student participation and/or satisfaction [Lindsay (1982) using data from National Longitudinal Study of the High School Class of 1972 (NLS-72)] as well as on the social climate in the school [Pittman and Haughwout (1987) using data from High School and Beyond (HS&B)]. Lee and Smith (1995) examine student-level data from the National Education Longitudinal Study of 1988 (NELS:88) and find a strong positive relationship between small schools and student engagement and cognitive gains, after controlling for several socioeconomic and demographic characteristics. In his recent survey of the literature, Pillemer (2001) also finds evidence of the benefits of stronger personal relationships in smaller schools, particularly between students and teachers. Some studies also report school size as an important characteristic in keeping at-risk students from dropping out, crediting the small school environment with personalizing the learning experience and improving student engagement. Raywid (1996) reviews the conclusions from several studies of small schools and finds that smaller schools have higher attendance rates and student satisfaction with the school and lower dropout, suspension, and disciplinary referral rates. Given these positive findings, Lee and Smith advocate a "school-within-a-school" reform approach to accomplish the small school effect. Similar recommendations are found in Lee and Smith (1994) and Lee, Smith, and Croninger (1995). Such an approach can be an expedient way to achieve a small school environment within an already existing large school facility.

Although the success of the small learning environment appears to be the direct result of school size, many researchers argue that school size has an *indirect* effect on these student outcomes because smaller schools facilitate collegiality and personalized relationships (primarily student-teacher). Because of the high degree of correlation between them, it is difficult to isolate the direct impact of the small school environment from its indirect effect on other, possibly more important, education reforms such as improved curriculum design, personalized instruction, and teacher collegiality.

[4] See Bickel, Howley, Williams, and Glascock (2001) for a review of some of these findings.

Given the evidence of success of the small school/learning environment, it is worth asking why large schools have emerged across the country. As described by Conant (1959), support for the large bureaucratic high school began in the 1950s. This support is based primarily on cost-efficiency ("economies of scale") and the ability to offer a comprehensive course list.

Scale economies arise in large schools as a result of a decreased need for per-pupil administrative/support staff, which allows these schools to devote a greater amount of resources to instruction. Efficiencies may also be associated with large material purchases. There is mixed empirical evidence in support of large economies of scale in high school operations. Lindsay (1982) cites evidence that scale economies are not universally achieved, particularly in rural areas. Stiefel *et al.* (1998) use New York City school budget data from 1995-96 to determine the size of economies of scale associated with large schools in NYC. They calculate per-pupil spending in schools with fewer than 600 students (a "small school") to be $7,628 as compared with $6,219 in schools with over 2,000 students (a "large school"). However, once the higher graduation rates in these smaller schools are taken into account, the four-year cost of educating a student who graduates from a small school is $49,554 as compared with $49,578 for a graduating student from a large school, a four-year cost difference of only $24. Furthermore, much of these economies are best achieved at the school district level (e.g., transportation) rather than at the school level of operation.

A second benefit of larger schools is their ability to offer a comprehensive class list along with a richer variety of school experiences (e.g., work-based learning, team sports, social or academic clubs). However, researchers have noted some limits to this advantage. Pittman and Haughwout (1987) calculate that "a 100 percent increase in enrollment yields only a 17 percent increase in the variety of offerings." Other researchers question the value of the types of additional offerings (e.g., introductory courses rather than higher level courses) offered in a larger school, and others have found that only a small minority of the student population actually takes advantage of these additional offerings.

One characteristic that defines a successful small school is its ability to be distinct from the larger parent high school. There are downsides to this distinction, however. Such a separation could also create a competitive relationship with the parent school or with other schools in the school district, resulting in perceptions of preferential treatment, teacher isolation from the larger group, and problems of space and scheduling. Raywid (1996) argues that any tensions among the schools would be eliminated and school coherence maintained, once the smaller school's separate identity is established. Finally, although there are some concerns that these small schools would be used to group students (e.g., tracking) as well as to exclude special-needs students, this grouping is not necessarily a problem inherent within the small school model.

Overall, the evidence is strong that students, particularly those identified as at-risk, benefit considerably from a smaller learning environment. The advantages associated with closer personal relationships (e.g., student-teacher and teacher-teacher) as well as other small school characteristics appear to outweigh any cost or comprehensiveness advantages obtained from a larger school.

Curriculum and instruction reform

A second feature common to many successful reform programs is a significant change in education curriculum and in the methods of instruction. Such changes may help reengage the high-potential students who are not meeting expectations in the traditional school. One way to reengage students is to link schooling with future academic and workplace successes. An example of this effort is the attempt to combine academic learning with vocational/work experiences. In a common school-within-a-school reform approach, vocational and academic curricula are organized around career areas. These career-focused schools can take a variety of forms. There might be one or more career areas within a single regular high school or students could take vocational education courses on a community college campus. Career-focused schools typically require internships or other work-based experiences to introduce the student to a career or industry. These programs attempt to link the work experiences to the classroom-learning environment.

Stern *et al.* (1995) reviewed the literature on the impact of school-to-work programs on student employment and earnings. Many of the studies they reviewed find that high school students who participate in these programs subsequently earn higher salaries in the job market after graduation. These studies use data from NLS:72 [Meyer and Wise (1982)], HS&B [Marsh (1991)], the National Longitudinal Survey of Youth Labor Market Experience [D'Amico (1984)], as well as other data on student experiences. In general, the studies find that program participants were more likely to find better jobs and higher pay if "they take a coherent sequence of courses and find jobs related to their training." [Stern *et al.* (1995), p. 76].

On the other hand, the relationship between time spent working and academic performance is not as conclusive. Some researchers have found that classroom work and academic performance suffered if students worked a substantial amount of time (generally more than 15-20 hours per week). Evidence on students with moderate hours in the workplace is more mixed—some studies find a positive effect on academic outcomes and others find a negative relationship. In addition to a considerable amount of anecdotal evidence (e.g., surveys) that these programs improve students' self-esteem, at least one evaluation found that student interns for the Boeing Corporation had an increased amount of technical competence, as well as an increased appreciation of the links between classroom concepts and their work experiences, after completing the work assignment.

Professional development

Ongoing professional development and instructional support for teachers and administrators is often cited as being an essential element of an effective education reform strategy. The research base in this area is extensive.[5] Reform efforts that necessitate major changes to the curriculum or education environment require a strategy that ensures continuous support and training for school-level and district educators. There is also research support for school-based professional development, particularly given the need for separate school programs with distinctive goals. For example, the integration of vocational education into the academic classroom as well as

[5] Some of this literature is reviewed in Visher, Emanuel, and Teitelbaum (1999).

increased efforts to teach to higher state/district standards will compel districts to train teachers in a more effective way and to have continuous follow-up development. Some of these reforms may also involve increased collaboration with colleagues and experimentation with the written curriculum and innovative pedagogical strategies.

Performance of alternative schools

Since there is not a standard structure of alternative education schools with a common set of attributes, it is difficult to evaluate the educational effectiveness of these programs in a rigorous way. Most evaluations of these schools have been anecdotal or simple. For example, a standard evaluation method is to compare student outcomes in the particular program with the outcomes of other students in the school district, without controlling for any participant self-selection biases.

More rigorous evaluations have been carried out on some high school reform initiatives. The appendix describes several nationally recognized high school reform initiatives. Specifically, it provides information on the key characteristics of some alternative high school dropout prevention programs or other high school education reform programs.

The first seven reform models in the appendix are taken from the evaluations of the various high school dropout prevention programs carried out by Mathematica Policy Research [Dynarski and Gleason (1998) and Dynarski, Gleason, Rangarajan, and Wood (1998)]. Students participating in these programs often had more than one of the risk factors associated with dropping out of school and several programs used the presence of these factors to identify the appropriate students to serve. However, it was also observed that many of these students had other characteristics that make them more likely to succeed—nearly 90 percent of the students were sure they were going to graduate from high school, many had excellent attendance, and about 75 percent indicated a desire to go on to college. This finding contributes to the difficulty in using only these risk factors to predict the probability of dropping out of high school.[6]

Mathematica researchers compared the outcomes of a group of students in the alternative schools (treatment group) to a "statistically equivalent" group of students who were not enrolled in this particular program or alternative school (control group). Students in the control group were eligible (they were "statistically equivalent" to the treatment group) for the programs but were denied entry. To allow the proper comparisons, it should be noted that students in the control group may not have remained in a regular public high school, but may have pursued alternative

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[6] Gleason and Dynarski (1998) follow 2,615 students, beginning in 10th grade, and examine how background and behavior affect the decision to drop out of school. They argue that commonly viewed risk factors like family characteristics (e.g., single parent, public assistance program participation, dropout mother or sibling, English is not primary language), previous school experiences (e.g., high absenteeism, overage for grade, low grades, disciplinary problems, previous dropout, does little homework or reading for fun, attended multiple schools), personal/psychological characteristics (e.g., low self-esteem, graduation uncertainty, disconnect with parents, watches a lot of TV) and adult responsibilities (e.g., student has a child) are not individually effective dropout identifiers. Less than 25 percent of the students with one of the risk factors dropped out of high school. Even a composite risk factor (based on the incidence of at least three individual risk factors) could not identify *ex ante* a majority of the students who dropped out of high school. Fifty-eight percent of the students identified as likely to drop out by the composite risk factor did not drop out of school.

educational situations than the specific treatment group program. It should also be noted that these programs were designed "to help students overcome personal, family, and social barriers and problems that interfered with their ability to go to school and do well there." Much of the help came through counseling services and the researchers observed the small and more personal settings of these programs.[7]

Mathematica evaluators found that these programs did not lower dropout rates significantly, although they did increase high school completion rates. There was also no evidence of program effects on self-esteem or other social outcomes (e.g., pregnancy rates, drug use, or criminal activity). The general finding of a small or no impact on dropping out or on other outcomes is consistent with similar evaluations that have been carried out on dropout prevention programs.

Although the majority of the educational programs reviewed in the appendix indicate little academic success, two program types have had some success with educating some groups of at-risk students. These two program types are career academies and the high school-college partnerships.

Career academies

Career academies combine the small school environment with significant curricular reform. The small school environment is achieved through a school-within-a-school. The curricular reform combines an academic and occupational curriculum into a single-school model. According to Stern and his colleagues (1995), career academies began in 1969 as primarily a dropout prevention program. They offered the at-risk student an opportunity to learn a trade. The focus of these early efforts was on vocation and not academic learning. Although many of these programs are now located in urban high schools serving the potentially traditional at-risk students, they have developed into broader education programs that prepare all types of students for either college or work. A key aspect of career academies is the strong link with community employers through internships. Academies with strong internship programs give students both school- and work-based education.

Kemple and Snipes (2000) examine the effectiveness of nine high schools and their career academies over a six-year period. Their focus is on a sample of 1,764 students who had applied to one of these nine career academies. These students were divided into three subgroups of traditional at-risk students: high, medium, and low risk of dropping out. Entrance into these subgroups was based on the incidence of background factors and prior school experiences related to dropping out. After this subgrouping, the original sample of students was divided into two samples. Of the original applicant sample, 959 students were randomly selected and were accepted into the career academy (the study's program group). The remaining 805 randomly selected students were not accepted into the career academy and placed into the control group. Kemple and Snipes compared the outcomes of these two groups of students and, based on these comparisons, concluded that career academies have improved student outcomes (e.g., improved attendance rates, credits earned, and grade point average, as well as reduced dropout rates),

[7] The authors of the evaluation observe an increase of about a third over the typical student costs as a result of the greater numbers of counselors and smaller classrooms in these programs.

particularly for those students starting high school with the highest risk of failure. Students in the low-risk group also benefited from the program by being exposed to increased career-related and vocational courses.

Although not all of the academies have the same characteristics, four common practices are thought to have contributed to the success of these programs:

- Close academic community among the cohort of students and within the specific career grouping
- Sustained interpersonal caring relationships between adults (e.g., teachers, counselors, mentors) and students
- Strong link between school learning and "real world" workplace activities
- Use of interactive school activities/projects.

High school-college partnerships

Although there is no single best alternative school organizational structure, a separate administrative unit could mean that these schools would be located outside of the regular high school campus. One example is a high school-college partnership. These partnerships serve a range of purposes, including compensatory and motivational programs for at-risk students, professional development programs for faculty (and administrators), continuing education for teachers, and curriculum development.[8] Most partnerships involve two-year community or technical colleges and master's degree-granting institutions. The primary purpose of over half of these college/university programs is to help at-risk or underrepresented students.

Concurrent enrollment programs

Two types of high school-college partnerships include concurrent enrollment programs and middle college high schools. A concurrent (dual) enrollment program allows high school students to take college courses, in addition to their high school courses, for college credit. Students in these programs remain attached to and graduate from their "home" high school. Greenberg (1991) notes concurrent enrollment reflects the most democratization of college admissions or the attendance in college by low to moderate achieving students. The benefits to students associated with concurrent enrollment include the chance to earn college credits while still in high school and, possibly, graduate sooner (obviously at a reduced family expense). Concurrent courses can also serve as a cure for "senioritis."[9] Parents benefit as well because of the potential for lower college costs and the opportunity to see their kids succeed in college.

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[8] In a national survey of these collaborations, 51 percent, or about 1,150 programs, of the responding institutions reported having a program that served students by bringing K-12 students to college and university campuses. See Albert and Wilbur (1995).

[9] This is the "wasted" senior year of high school (usually after the student has been admitted to college). See National Commission on the High School Senior Year (2001) for a description of this problem.

An example of concurrent enrollment can be found at the Santa Fe Community College (SFCC). From the beginning, SFCC served double duty, as a two-year college for Alachua County, and as the vocational-technical center for the Alachua School District. In the first years of operation, during the mid-1970s, high school students traveled to their vocational-technical courses at an assortment of community college sites. But within two years, the community college's new campus opened, consolidating programs at a single site in Gainesville, FL. Coincident with that move, the college added a number of high school courses so that students would not have to travel regularly between their high school and the community college (a considerable distance for some students) in order to attend required classes.

Because SFCC's vocational-technical program originally targeted students who were most at-risk of dropping out of school, attrition rates were viewed as unacceptably high. As a result of various factors, the program refocused its efforts on under-achieving students, who were perceived as having a greater likelihood of benefiting from the alternative educational environment that SFCC offered. Today, the program serves a range of high school juniors and seniors. Incoming high school GPAs for students currently enrolled in SFCC range from 1.7 to 4.0, reflecting the diversity of students served by the school. Many of these students were under-performing or were unhappy in their traditional school. Some were simply anxious to earn college credits while still in high school.

Middle college high schools (MCHSs)

MCHSs are self-contained high schools located on college campuses. Over 30 MCHS programs have been established since the first one at LaGuardia Community College was created in 1974.[10] These programs differ by the level of student (some take freshmen, others sophomores, and still others take juniors and seniors), location (most in urban areas), and type of university (most on community/2-year colleges).

The "mission statement" of the MCHS consortium as well as many of the individual schools reflects the commitment by MCHS to educating at-risk students. The consortium statement declares "Middle College High School Consortium members share the fundamental belief that collaboration between high schools and colleges provides both institutions with the ability to develop a seamless educational continuum that benefits the student as (s)he moves from one level to the next. The collaboration forces two traditionally closed institutions to examine the assumptions that have allowed each to exist as if the other does not." The statement also explains the psychological as well as financial importance of locating the high school on a college campus –"[t]he freedom of the college campus provides at-risk youth with the environment to develop a sense of responsibility for their own education. The location of a high school on a college campus symbolically signals to students that a college education is possible

[10]See Gehring (2001). Weschsler (2001) describes the genesis of the LaGuardia MCHS as a response to the open admissions policy (created around 1970) of the City University of New York. The LaGuardia program was to "prepare New York City secondary students to take advantage of increased higher education opportunity." According to another description by the founder and originator of this MCHS [Lieberman (1985), p. 48], the LaGuardia program was originally designed "to reduce the dropout rate in urban high schools, to prepare students more effectively for work or college, and to attract more students to higher education."

and in fact a natural next step. The college environment provides an academically enriched setting for students who would probably be lost in the larger, traditional educational system. Collaboration between a high school and a college can also result in a cost effective sharing of resources." Explicitly listed program goals are that schools "are accountable for providing learning communities that focus on issues, practices and relationships that result in improved student achievement and personal growth, for cultivating collegial relationships with their college partners and for encouraging students to become global citizens and lifelong learners."

The research literature does not afford much guidance in measuring the true impact of middle college high schools. There are no major studies of middle colleges using experimental designs or correlation analysis, nor are there comprehensive reviews of their effects on student achievement. However, research laying out implementation challenges and policy-related issues as well as case studies focusing on potential benefits for program participants does exist (Nunley, Kay, Shartle-Galotto and Smith, 2000). Lieberman (1985) notes that the LaGuardia MCHS has a dropout rate of 14.5 percent compared with the New York City-wide average of 46 percent. Other encouraging outcomes include an average attendance rate of 84.5 percent (higher than in NYC), and the fact that 90 percent of seniors graduate and 85 percent of the graduates go on to university/college (about 50 percent of those go to LaGuardia Community College).

Although these numbers suggest some program success, there are methodological problems in making the simple comparisons between the dropout rate achieved by the MCHS and the one from the regular urban high school. First, students who attend the LaGuardia MCHS (as well as other MCHS programs) are not randomly selected. As outlined in the MCHS consortium mission statement, these programs enroll students who have been identified as bright, but unsuccessful or unmotivated within the traditional high school setting. It is likely that any dropout prevention program that recruits students based on a single characteristic that is associated with the potential for dropping out will include a large percentage of students who would have graduated without the program. Second, since many of these programs have the ability to select students, they may seek out the students who are more likely to succeed in an MCHS environment. As Dynarski (2000) observes, "[o]ne key feature of the [Seattle] Middle College High School is that it had staff and current students interview prospective students to ensure that they were motivated adequately for the challenge of completing high school." As a result, the positive effect measured for these programs likely overstates the impact they would have if applied more broadly to underperforming students.

In the more rigorous examination of the Seattle MCHS, Mathematica did not find a statistically significant difference in dropout rates between students in the control group and treatment group students. However, there was a difference (but not statistically significant) in the high school completion rates between the two groups.[11] A closer examination reveals that about half of the graduating students received a GED rather than a high school diploma. Larger treatment effects were found when the students were broken up into two groups, "low-risk" and "high-risk" of academic failure. Under this breakdown, there were statistically significant effects on dropout rates as well as high school completion among only the low-risk students. The evaluators did not

[11] It should be noted that although Dynarski *et al.* did find a positive effect on high school completion rates in all of the alternative school programs that had students old enough to graduate during the evaluation period, they did not find a statistically significant effect on either dropout rates or high school completion in any of the programs.

find any impact on other (non-academic) outcomes such as increased self-esteem and/or decreased teenage pregnancy, crime, and marijuana usage in the Seattle MCHS treatment group. Indeed, teenage pregnancy and male arrest rates were the only statistically significant effects and they were both *higher* in the treatment group than in the control group.

It is not surprising that MCHS programs are most successful with the low-risk students. These students are expected to benefit from more flexible educational pacing, broader curricular options, greater independence, and the availability of internships found in MCHS. College campuses provide a safe and orderly educational environment that is conducive to learning, which is one of the correlates of an effective school. Students may also benefit from exposure to the college resources (e.g., the same library and science labs as the college students). They gain self-confidence academically and they enjoy being treated like adults by the college faculty. Students also seem to thrive on the campus lifestyle and on getting college-level experience while still in high school. This ability to take and succeed at college-level courses is credited by one student at the MCHS on the Contra Costa College campus as unlocking "a new found engagement with school." [Gehring, 2001]. However, although the hope is that these under-performing but otherwise bright students will blossom in a college campus setting, there is scant "evidence" of success. Indeed, what little evidence exits is largely anecdotal.

Articles [e.g., Lords (2000), Gehring (2001)] that describe the MCHS experience rely on student and teacher testimonials that indicate that taking and passing college-level courses increased student self-esteem. There has been no systematic exploration of the success of all of these MCHS programs. Because they represent a significant change in the delivery of education, however, it is important to evaluate these programs. On the other hand, it seems unlikely that traditional at-risk students (those in danger of dropping out of school) will be successful (or even welcome) in the MCHS environment. Schools that are successful with these at-risk students in urban areas are more likely to have more highly structured education programs under tight control by teachers and administrators. This structure is typically not found on open college campuses.

Key attributes of college-high school collaborations

Overall, three key characteristics contribute to the educational success of the high school-college collaborations:

- **Flexible educational pacing**: At LaGuardia MCHS, courses are taught thematically rather than sequentially to accommodate for the cooperative education with internships and experimental learning process. Courses are typically smaller than in the regular urban high school setting—maximum enrollments of 27 students in the regular classrooms and 15 in any remedial classes. Cullen (1991) describes the effectiveness of the flexibility at LaGuardia, where students are self-paced. The grading system "stresses achievement and realization of potential."[12] Failing grades are not given and the student is allowed to pass with additional work or, at worse, to receive "no credit."

[12] Cullen (1991), p. 87

- **Broader curricular options**: Students in the 11th and 12th grades have the option to enroll in college courses. As a result, students can earn as much as one full year of college credit while earning a high school degree.

- **Internships**: Students are required to complete three cooperative education internships. These internships are patterned on college cooperative learning experiences and are required of the students. Lieberman (1985) credits the internship program at LaGuardia for developing motivation and a sense of self-worth in the students.

Effective schools

The examination of the performance of alternative schools is not the only way to identify key education reform characteristics. Largely in response to the general empirical findings of school resource ineffectiveness from "education production functions," a different type of education research emerged that eschews the formal econometric structure of the education production function literature.[13] This research is generally qualitative and typically carried out as case studies of particular schools that have "succeeded" (usually defined as student/school performance beyond expectations), particularly with a large population of disadvantaged students located in urban school districts. The research method was to first identify the schools that have been the most successful in educating youth (regular or at-risk) and then compare and contrast these schools to the other less successful schools in an attempt to isolate the key characteristics of these schools that make them effective.

Purkey and Smith (1983) combine the findings from a review of the effective schools literature with research from organizational theory and workplace organization reform. They group the characteristics of an effective school into two sets of variables: organization-structure and process variables.[14] They identify eight organization-structure variables that can be put into place by administrative or bureaucratic methods and represent the control variables for the school's teachers and administrators. These variables include:

- School-site management—school staff is given considerable responsibility and authority to affect performance.

- Instructional leadership—strong leadership from teachers and administrators is encouraged bring about improvements.

- Staff stability—turnover should be minimized.

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[13] See Hanushek (1986, 1996) for reviews of the education production function literature.

[14] There is considerable overlap between the set of organization-instruction variables that are identified in these earlier reviews and those found to be effective in the more recent reviews of the effective management literature. Odden and Picus (2000) synthesize the literature, with a special emphasis on the school-based management literature.

- Curriculum articulation and organization—a rich/in-depth curriculum at the secondary level (rather than a broad but shallow curriculum).

- School-wide staff development—links staff to instructional and organizational changes.

- Parental involvement/support—involves parents in homework, attendance, and discipline policies.

- School-wide recognition of academic success—public honoring of achievements to stress importance.

- Maximized learning time—more day/class period devoted to learning activities with infrequent disruptions.

- School district support of school activities—district support for school changes with the appropriate and necessary resources.

Purkey and Smith also identify four process variables that define the culture and climate of the effective school:

- Collaborative planning and collegial relationships—teachers and administrators communicate and work together to accomplish common goals.

- A sense of community—building a feeling of community.

- Clear goals and high expectations that are commonly shared by students, teachers, and administrations—staff agree on goals and expectations to direct total energies to achievements.

- An orderly school environment—discipline is maintained in the building and classrooms with mutually agreed to and fairly administered rules.

What is interesting is that many of these organization-structure and process variables replicate the key characteristics identified in the alternative schools literature. Common characteristics include the sense of community among students and teachers, a significant change in school curricula, and an increase in the amount of teacher involvement in the setting of the curricula as well as other school reforms.

Rowan *et al.* (1983) and Rosenholtz (1985) list several methodological problems associated with effective schools research. One problem is that the comparison of outlier schools (highly effective with highly ineffective) neglects the performance of the "average" neighborhood school. The contrast between average schools and highly effective schools may not be as stark as the contrast between effective and ineffective schools. Consequently, the required modifications for average schools may be subtle. A second problem is that the case study approach described here is unable to quantify the relationships between individual school

characteristics and student performance. Because there is considerable uncertainty regarding the identification and measurement of school-related factors and school-level data are not readily available, much of the evidence in these case studies is anecdotal. The lack of data means that it is difficult to generalize results outside of the schools and/or student populations examined in the case studies. Finally, these studies typically employ cross-sectional observations, so there is no certainty that the characteristics that make these schools effective will be stable over time.

Because we are interested in high school reform and improvement, another drawback to effective schools research from our perspective is its primary focus on the performance of elementary rather than secondary schools. There are significant differences between elementary and secondary schools that could affect the implementation of these effective schools policies. The organization of secondary schools is considerably more complex, because they generally have larger staffs and more pupils. The curriculum is broader and comprises a number of different goals. There are more layers of administration in secondary schools to handle this larger organization. Students in secondary schools have already had several years of school that might not be easily affected by new effective school practices. However, many of the identified reforms are applicable to the high school experience.

Bottom line for NCS

What should be done to develop and ensure the success of the federation of New Collaborative Schools? Information from the alternative and effective schools literature reviewed in this paper can be used to guide the design of the NCS. These proposed recommendations are appropriate, if not necessary, within many educational contexts, including a high school-college collaboration (e.g., concurrent enrollment, MCHS) or career academy. Important features that are common to the most successful schools include:

- **Small learning environment**—There appears to be considerable evidence in both the alternative and effective schools literatures of the positive impacts associated with the small learning environment. Researchers maintain the academic benefits associated with building a feeling of "community" and identify small schools as a way to attain a community feeling. Positive impacts must be weighed against the forfeited cost and comprehensiveness advantages of a large school.

- **Curriculum and instructional reform**—Both the alternative and effective schools literatures identify the need for significant curricular reforms. However, these reforms depend crucially on the target student population. Under any circumstance, every effort should be taken to incorporate best teaching practices appropriate to the student population. The effective schools literature identifies the benefits of rigorous academics that focus on student learning. The alternative schools literature recognizes that many of the successful programs integrate classroom academics with the "real world" of business. This has often been done through career academies, tech-prep, internships or cooperatives. For the greatest benefit, the academic schedules must be flexible to allow students the time required away from the classroom learning. In addition, extensive monitoring is required to ensure a good fit between the employer and the student. Finally, there should be some consideration of limiting or even restricting the amount of

the students' work activity (non-academic schedule) so that it does not interfere with the student's academic performance.

- **Ongoing professional development**—Both the alternative and effective schools literature also identify the importance of teachers in any reform process. The effective schools literature stresses the need to involve all teachers in decision-making. The alternative schools literature sees teachers as the principal designers and controllers of the school, with an education emphasis that is guided by their strengths and interests. Indeed, it appears to be critical to the success of any education reform program to involve the teachers and staff in its implementation. In order to accomplish these reforms successfully, there needs to be a significant investment in *school-specific* teacher training and professional development. Teachers will need to be able to engage students who were not successful in the traditional schools. To aid in this endeavor, teachers will need to be exposed to a wide range of instructional strategies and teaching techniques. In addition, teachers are likely to play a larger role in the students' lives as mentors or counselors. Depending on the nature of the curricular reforms, change in governance structure, and expansion of responsibilities, teachers will need to be trained on these changes, and extensive follow-ups will need to be carried out.

- **Counseling/guidance services**—All students would benefit from consistent and constant monitoring and guidance. This guidance could be academic, for those students interested in pursuing college, or it could be linked to the business community for those students in a vocational education program. There is some anecdotal evidence that students with greater access to counseling will be more likely to enroll in college and to hold greater career aspirations. The flexibility of some of these programs requires closer monitoring of students. In addition, some of the successful programs require course attendance and follow-up with faculty on student performance, particularly in a MCHS program. The smaller school environment may make this counseling more personal.

- **Evaluation and assessment**—Any large-scale education reform, such as the type involved with NCS, will require constant evaluation and assessment. These evaluations would be in addition to the current wave of assessments that schools in most states must achieve to meet state and/or district educational standards. Once a particular "at-risk" (or other type of) student has been identified and admitted into the program, the school will take on some basic educational goals (e.g., increase graduation and college attendance, decrease dropouts, improve employment and earnings opportunities). Given these goals, evaluations and assessments must follow to determine if the reform has been successful, or if modifications to the original reform model or goals should be made.

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Appendix: Selected alternative schools

School	Target population	Program type	Small school	Curricular reform	Teacher/staff development	Guidance services	Internship/ coop	Student outcomes
Boston JFY & Univ. HS	Dropouts	Alt. HS leading to HS diploma	Yes – operated in a separate facility	Competency-based curriculum		Yes		No effect on dropouts or other outcomes or at-risk
Chicago School-within-a-school	Low Test Scores/behind Grade Level	School-within-a-school leading to HS diploma	Yes: small class size			Counseling and support services w/attendance monitoring		No effect on dropouts or other outcomes or at-risk
Queens Flowers	Dropouts	GED program w/ counseling	Yes: enrolled < 100 at a time				Job training	No effect on dropouts or other outcomes or at-risk
Las Vegas HS	Low Grades Low Std. Tests, Behind Grade Level Ever Dropout	Alt. HS w/ flex. Enrollment, credit accumulation.	Yes – operated in a separate facility	Cooperative learning, small group instruction		Yes, enhanced social services & child care		No effect on dropouts or other outcomes or at-risk
Miami Corp. Academy	Any Two: Low Grades Low Std. Tests Behind Grade Level Poor Attendance Ever Dropout Preg/parent	Alt. HS leading to HS diploma	Yes – operated in a separate facility			Enhanced social services and mentoring, and attendance monitoring		No effect on dropouts or at-risk or other outcomes
Seattle MCHS	Ever Dropout Poor Attendance	MCHS leading to a HS diploma	Yes: operated on a comm. college campus	Experimental learning		Extensive monitoring of student performance	Yes with links to business community	No effect on dropouts or other outcomes; improved low-risk student outcomes
St. Louis Metro. Youth Academy	Dropouts Low Family Income and welfare recipient.	GED	Yes: enrolled < 100 at a time	Experimental learning		Counseling & social services	Yes	Treatment group more likely to get GED; no effect on other outcomes
Career Academies	Heterogeneous student population: dropouts & good students	School-within-a-school, acad/voc curriculum, employer partnerships	Yes, with the greatest success when more interpersonal support	Career-related combined with straight academic courses		Yes, work related specifically		Improved outcomes (reduced dropout rates, increased attendance, course taking, and graduating on time for students at high-risk to dropout; more limited success with low-risk group

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School	Target population	Program type	Small school	Curricular reform	Teacher/staff development	Guidance services	Internship/ coop	Student outcomes
Tech-Prep Programs	Students in the "middle-range" of school performance	There is not one model type. Some are similar to MCHS		Combines academic & vocational education; increases the link to post-secondary education		Extensive		Anecdotal evidence of increased student interest in technical (math and science) subjects and increased employer interest in schools
High Schools that Work	According to brochure: 60-65% of HS who plan to work, attend a 2-year technical/ comm. col., enroll in a four-year college w/ open admin. policy, or the military after HS grad.			Traditional college-prep w/ quality vocational and tech studies	Teachers received focused staff development on techniques and strategies (teamwork, applied learning and project-based instruction) for teaching a challenging academic core; support for activities outside of the district to hear new ideas	Counseling worked to get students to complete a challenging program of study; placed all youths in an upgraded academic core and a concentration. parents involved in the guidance process; counselors connected career-bound students with potential employers.		Improves NAEP scores all students (incl. voced students) take more academic courses (math and science) than students at the same schools did before HSTW; positive results stable across a variety of schools (urban and rural)
Talent Development High Schools w/ Career Academies	Potential dropouts	School-within-a-school, acad/voc curriculum, employer partnerships	Yes-schools-within-a-school		Pro develop every other week; 9th grade teachers are trained to work together as a team; trained to teach using an extended course period ; teachers learn new methods to teach specific subjects.		Yes, related to chosen career academy	Positive, but self-reviewed: relative to other schools in the district, TDHS had greater improvement over 2 years measured by the pass rate of the MD Func.Exams (stronger in math and smaller in lang.). stud. retention dropped since it began using HSTD.